Home Equity-Based Refinancing and Household Financial Difficulties: The Case of Norway*

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Abstract

Housing prices in Norway and the Norwegian household-debt-to-disposable-income ratio have reached unprecedentedly high levels in recent years, raising debates about whether there is a serious housing bubble. Contributing to the debates, we study home equity-based refinancing in Norway and have two main findings. First, along with soaring housing prices, homeowners significantly withdraw their home equity. This cash-out accounts for at least one-third of outstanding household mortgages and hence substantially contributed to the high debt-to-income ratio. Second, households with large cash-out-to-income ratios are more likely to have financial difficulties. As cash-out refinancing is blamed to be one of the key drivers of the subprime crisis in the United States, our findings call for more attention to home equity-based refinancing in the Norwegian housing market.

Keywords: *household finance, home equity, cash-out, refinancing, household leverage*

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1 Introduction

Historically, high household leverage and property market bubbles stemming from a period of credit boom is often the reason for financial crises. The Great Recession in 2007-2009 is no exception. Across countries, there is a strong correlation between increase in household debt-to-income ratio during the years preceding 2007 and subsequent declines in real house prices, household consumption and GDP (IMF, 2012). Examples include the US and UK. However, not all industrialized countries experienced bust-boom cycles. In Germany, Austria and Switzerland, real house prices increased only moderately prior to the Great Recession, whereas the household debt-income ratio and unemployment rate have remained stable during the last decade.

The trajectory of the Norwegian economy resembles neither of the above two categories. Figure 1 compares real house prices and household debt-income ratios in the US, UK, Germany and Norway. It seems as though Norway followed the trajectory of anglo-saxon economies until the crisis, and then the trajectory of Germany. This raises the question of whether Norway will remain an outlier, or its housing market will eventually crash with subsequent reduction in household consumption and economic activity. The issue has attracted much attention throughout the world and initiated debates among politicians, researchers and the public society. Three Nobel Prize laureates, Paul Krugman (in 2014), Vernon Smith (in 2013) and Robert Shiller (in 2012), as well as the International Monetary Fund (IMF) (in 2013), have warned the Norwegian housing bubble.[1] However, the prime minister of Norway, Erna Solberg, denied the existence of a bubble: "*Norway is different and foreign economists don't understand it*".[2]

There is no doubt that a large burden of household debt poses a risk to financial stability, as households may be forced to reduce consumption when experiencing unexpected future interest rate increases, falling house prices or loss of income (e.g. Campbell, 2013). However, country-specific factors may cause the sustainable debt-income ratio quite different across

[1]Links to the news on Paul Krugmann - www.aftenbladet.no; Vernon Smith - www.aftenposten.no; Robert Shiller - www.cnbc.com; IMF - www.ft.com.

[2]Links to the news on Erna Solberg - norwaytoday.info.

countries (e.g. Rinaldi and Sanchis-Arellano, 2006). For example, high oil prices and low interest rates prospered the Norwegian economy in years after the international crisis, and high income equality reduces credit risk (e.g. Kumhof and Ranciere, 2010). Therefore, a high debt-to-income ratio may not necessarily mean a bubble in Norway.

Aiming to shed lights on the sustainability of high household leverage, the current study examines one significant part of household debt, home equity-based borrowing. That is, existing home owners withdraw home equity by refinancing mortgages. We identify and quantify significant *cash-out* in the Norwegian housing market and show that cash-out is positively associated with household financial difficulties.

Our research relies on a comprehensive dataset provided by Statistics Norway (SSB). SSB conducted the 2012 *Survey on Living Conditions for Norwegian Residents*, collecting data on house price and mortgage information, as well as household financial conditions, of a randomly chosen sample of Norwegian households. SSB then linked the survey data with Norwegian administrative register data, providing further household characteristics such as member ages, gender, education, incomes, health conditions, and immigration status.

To examine cash-out, we regress current mortgage on predicted price, both at the household level and scaled by the bought price, while controlling for other house and household characteristics. We construct a simple model to illustrate the underlying logic, which is as follows. After buying a house, the household pay back their loan over time according to a pre-specified payment schedule. If there is no home equity withdrawal, the remaining mortgage is determined by the original mortgage and duration of ownership, while it is not related to price increase (i.e. current price scaled by bought price). A significantly positive relationship between remaining mortgage and price increase therefore indicates the presence of cash-out in the housing market. Our regression results confirm such a relationship. A 1% increase of price increase is associated with a 0.7% increase of the mortgage-to-bought price ratio. This cash-out effect is robust across various subgroups of households according to various household characteristics. In particular, we find that education amplifies the cash-out effect, seemingly inconsistent with the argument that cash-out reflects self-control problems of home owners (e.g. Laibson, 1997; Mian and Sufi, 2011).

One caveat is that the estimated cash-out effect could be subject to reverse causality

or omitted variable bias. We address potential endogeneity concerns as follows. First, if households withdraw home equity in order to renovate their houses and hence raise house prices, the positive relationship between current mortgage and price increase may be due to reverse causality. When we control for renovation expenses, Our results barely change, indicating that the renovation channel cannot be the main driver. Second, a shock to expected income growth may increase house prices and, at the same time, households may raise debt to smooth consumption as argued in the life cycle theory (e.g. Attanasio and Weber, 1995). The co-movements of house price and household debt then create a positive but spurious relationship between the two variables. We control for region-level expected income growth, proxied by the average income growth of the region in the last a few years, but the results hardly change. Third, we instrument individual price increase by the average price increase as well as house supply elasticity at the region level, and 2SLS regression results further confirm the cash-out effect.

The data allow us to estimate a lower bound of cash-out by assuming straight-line amortization schedules and 30-year maturities of mortgages. We find that on average, cash-out accounts for at least 35% of total current mortgages, over half a million Norwegian kroner per household. Lack of consumption information does not allow us to directly tell what households do using cash-out. However, a survey by TNS Gallup (a Norwegian survey firm) in 2010 investigates the main purpose of new issued loans secured on dwellings, including both home-buying loans and refinancing loans, and shows that purchase of a car, boat or cabin was reported by 22% loans, so consumer spending is one of the main purposes of home-equity withdrawal in Norway.[3]

Cash-out can hedge personal income risk and raise current consumption in the life cycle of home owners (Browning and Crossley, 2001). It stimulates economic growth in the short run, but the stimulation is unsustainable if households become heavily indebted and vulnerable to negative shocks (Iacoviello, 2005; Mian et al., 2013). We thus examine whether cash-out is linked to household financial conditions. The survey asks whether the household have difficulties in dealing with daily payments or unexpected expenses. We create a dummy for the 17.5% respondents who answered affirmatively and regress this dummy on the ratio of

[3]See *Risk Outlook 2011: The Financial Market in Norway*. Available at http://www.finanstilsynet.no/.

cash-out to household income. The results show a significantly positive association between cash-out and household financial difficulties. In particular, the probability of having financial difficulties for the quarter of households with the highest cash-out-to-income ratio is about 48% higher than those with the lowest cash-out-to-income ratio. Furthermore, we run a horse race by including in the same regression both the cash-out-to-income ratio and the mortgage-to-income ratio. The latter is widely considered as a proxy for household leverage. We find that the cash-out-to-income ratio is significantly linked to financial difficulties, while the mortgage-to-income ratio is not. Due to lack of time-series data, we cannot claim if there is a causal relationship, but the fact that cash-out is a stock variable in our data, whereas financial conditions are reported in the current survey, indicates that cash-out is a good indicator of household financial difficulties.

Our study contributes to the recent literature that studies home equity-based refinancing and its determinants (e.g. Hurst and Stafford, 2004; Greenspan and Kennedy, 2008; Benito, 2009; Mian and Sufi, 2011; Chen et al., 2013; Khandani et al., 2013; Ebner, 2013; Mian and Sufi, 2014; Duca and Kumar, 2014, etc.). While almost all previous empirical studies examine annual cash-out through panel data, e.g. by regressing annual mortgage change on annual price increase, we examine the *accumulative* cash-out effect at a specific time after the current house is bought. This allows us to estimate the ratio of cash-out to outstanding mortgage both at the individual household level and at the aggregate country level, and to compare cash-out with original mortgages. In aggregate, cash-out accounts for at least 35% of outstanding mortgages of house owners in Norway, significantly contributing to the Norwegian high debt-to-income ratio.[4]

Our empirical framework is similar to Mian and Sufi (2011). Using credit report information to compare growth in household debt by zip code and credit score, Mian and Sufi (2011) identify the *home equity-based borrowing channel* that largely concentrates among households with low credit scores living in neighbourhoods with steep increases in house prices. There are key differences between our study and Mian and Sufi (2011). First, Mian

[4]The ratio of cash-out to outstanding mortgages is much higher in Norway than in the US. For example, a conservative estimation of home equity extraction in the US is that it accounts for 11.5% of new loan balances (e.g. Chen et al., 2013). Greenspan and Kennedy (2005) shows a much higher figure, 75%, of home equity extraction. However, cash-out based on equity of the current house is below one-third of the total home equity extraction and hence is no more than 25% of new loan balance.

and Sufi (2011) have mortgage information of credit card holders from a consumer credit bureau agency, and persons without mortgages are not considered as home owners even though other persons in the same household may have mortgages.[5] Instead, we use a random sample of Norwegian households with comprehensive information on each household member from the Norwegian administrative register data. This data advantage allows us to reduce the measurement error in classifying households and to conduct analyses at the household level. Second, while Mian and Sufi (2011) estimate the default rate implications of aggressive home equity-based borrowing in and after the 2007-2009 financial crisis in the US, we analyze financial difficulties, an important indicator for future defaults, of individual households when there has not been a crisis in Norway.

In recent years, cash-out in Norway has been mostly in the form of *flexible mortgages* - credit lines against home equity. Our results that cash-out is linked to household financial difficulties are thus consistent with Garmaise (2013) in that flexible mortgage borrowers are more likely to experience subsequent delinquency. Moreover, the period in our study is featured by rising home prices, falling interest rates, and increasingly competitive and efficient refinancing markets. In such an environment, Khandani et al. (2013) document a *ratchet effect* of cash-out refinancing, which leads to a new type of systematic risk. Our results support their arguments.

Finally, our study is related to the extensive literature that uses aggregate time series or household data to estimate the effects of financial and house wealth on consumption (e.g. Benjamin et al., 2004; Campbell and Cocco, 2007; Attansio et al., 2011; Carroll et al., 2011). Although these papers do not focus on home equity withdrawal, our results can be compared to the results reported in this literature by making assumptions about the cash-out share used for consumption.

The remainder of the paper is organized as follows. In section 2, we describe the data, sample and variables in our study. Section 3 examines cash-out refinancing in the Norwegian housing market. Section 4 shows how household financial difficulties are linked with large cash-out. Finally, Section 5 concludes.

[5]The authors report that the problem is substantial as there are 42% homeowners in their dataset, whereas in the corresponding US Census there are 65% homeowners.

2 Data, Sample, and Summary Statistics

2.1 The Norwegian Housing Market

During the 1980s, direct credit regulations of banks were abolished in Norway. The credit market liberalization caused a sharp but short-lived boom in real estate markets, followed by collapses in stock and housing markets and an increase in credit defaults which forced many banks to close down or merge with other banks (Krogh, 2010; Jansen and Krogh, 2011). After the bank crisis subsided, house prices in Norway have increased every year, except in 2008. From 1992 to 2014, the national house price index computed by Statistics Norway increased by 402%, whereas the consumer price index only increased by 55%.

A majority (76%) of Norwegian households is house owners, and the sharp price appreciation has boosted household wealth. Houses constitute about two thirds of gross household wealth and more than 100% of net household wealth (OECD, 2014). However, credit growth to household has exceeded income growth for more than a decade and the average debt-to-income ratio of households increased from 130% in 1992 to 220% in 2014. Among younger people (aged 25-44), the average ratio is almost 300%.[6] Credit growth has been boosted by flexible mortgages, i.e. bank credit lines backed by home equity, which have made housing wealth more liquid. So far, high household leverage has not affected the credit default rate, which has been low and stable at around 1% since the late 1990s (Solheim and Vatne, 2013). One reason for this could be the full-recourse loan policy in Norway: the credit does not follow the house but the borrower.

Following the international financial crisis, the Norwegian government has started to implement macro- and micro-prudential policies to enhance financial stability (IMF, 2014). A counter-cyclical capital buffer for banks will go into effect from June 2015, minimum risk weights for residential mortgages have been raised and new guidelines that cap loan-to-value ratios on mortgage loans have been issued. So far, stricter capital requirements and tightening of loan-to-value limits do not seem to have contained the increase in house prices and credit growth: from February 2014 to February 2015, house prices and household debt

[6]See the 2014 Financial Stability Report of Norwegian central bank. Available at www.norges-bank.no.

increased by, respectively, 8.7% and 6.2%.

Almost all mortgages in Norway are adjustable–rate mortgages. This is different from the US, where usually mortgages have fixed-rates with no prepayment penalty, so refinancing is largely driven by the change of mortgage rates.

2.2 Data and Sample Selection

We use household-level data from the 2012 Survey on Living Conditions for Norwegian Residents. The survey was conducted by Statistics Norway (SSB) mainly through telephone interviews, and in some cases, personal interviews. The survey sample is supposed to represent the total population of Norway and is randomly chosen from the Norwegian Population Statistics System for persons above the age of 16. Selection criteria are based on gender, age, education, family size and region. The survey covers information of household members, house ownership, house price, mortgage(s), as well as household financial situation. The main survey questions are shown in Appendix II. SSB links data from the survey with the Norwegian Registration dataset, which includes comprehensive information, such as income and taxes, of all individuals of the country in 2012. After eliminating identification information, the linked data are made available to researchers through the Norwegian Social Science Data Archives.

The original data include 6,186 observations. We conduct the following sample selection process for our analyses. First, we drop all households who do not have the full ownership of the house. There are three cases of house ownership in the survey data, "self-owner" (4,403), "own with a group" (728), and "renter" (1,009). Renters are irrelevant for our study. We drop households with shared home ownership because they have joint debt that is not in their own balance sheets. Second, we drop observations with missing current mortgage (168), missing predicted price (340) or missing bought price (190) of the house. All these variables are necessary to examine cash-out refinancing. Third, we drop households who have lived in the house for over 25 years (918). For a long period, many things of the household such as members and their incomes or education could have substantially changed, making it difficult to explain our empirical findings. Furthermore, even if the household cashed out a large amount of money earlier during the long period, they may have paid back the money

and cash-out is no longer in their balance now. The cash-out behavior of these households is not included in our data.[7] After the above three steps, our final sample is left with 2,787 observations.

2.3 Variables and Statistics

All variables used in our analysis, including both house characteristics and household characteristics, are summarized in Appendix I. Table 1 presents the summary statistics of main variables relevant to cash-out refinancing decisions. Panel A of the table describes statistics for the full sample. We see that 84% households have mortgage in their houses in 2012 (*HaveMortgage*). On average, the bought price is 1.91 million (*BoughtPrice*) and the predicted current price (*PredictedPrice*) is 3.64 million.[8] Approximately, for an average ownership duration of 10.11 years (*OwnerDuration*), the average house price in Norway has almost doubled. The variable, *PriceIncrease*, is defined as *PredictedPrice* divided by *BoughtPrice*, measuring the price increase of individual houses. The average *PriceIncrease* is 3.05, while the median is 1.88. *HouseSize* is the area of the house, measured in square meters. The average house size is 180 m^2. The above house characteristic variables except *OwnerDuration* have some extreme values, so we winsorize them at the 1^{st} and 99^{th} percentile to reduce outlier bias.

The data include detailed income information for all household members. We define the household income (*TotalIncome*) as the sum of all member's income. The average household income is 0.92 million.[9] To allow for non-linear effects from household income, we create three dummies, *Income1* - *Income3* according to *TotalIncome*, which are equal to one respectively if *TotalIncome* lies in the lowest, middle, and largest terciles of the full sample. In the data, *Income1* indicates households with income below 0.68 million, while *Income3* indicates those with income above 1.06 million. The person with the highest income in the household is

[7]Our results are robust if we keep the 918 observations with ownership longer than 25 years and if we drop those with ownership longer than 20 years.

[8]Throughout this paper, except when being specified, price or money amount is measured in million Norwegian kroner.

[9]Household income is capped at 1.78 million in the data in order to make the interviewee anonymous. Among 2,787 observations in our sample, 90 have income capped at 1.78. The results in this paper do not change if we drop these observations.

very likely to be the one who makes mortgage or cash-out decisions for the household. We hence use this person's age (*Age*) and gender (*Gender*) to proxy those for the household. *Age* has an average of 47.33 years, and *Gender* shows that 69% are males. We construct a dummy indicator of the interviewee's health condition (*Health*), which is equal to one if the interviewee says "bad" or "neither good nor bad" about his/her health condition. About 83% of interviewees are healthy. The dummy *Urban* indicates whether the house locates in urban areas. In our sample, *Urban* is equal to one for 82% households. On average, a household has 1.16 properties (*NumProperty*) and have 3.10 members (*NumMember*), among whom 1.59 are employed (*NumEmployed*), 0.86 are kids under age of 15 (*NumKids*), 0.52 have at least an undergraduate degree (*NumHighEdu*) and 0.20 are immigrants (*NumImmigrants*) from other countries.

Panel B of the table shows summary statistics of subsamples with mortgaged households and non-mortgaged households. Most Norwegians rely on mortgages to buy a house. Over time, they repay the mortgages according to a pre-specified schedule, except when there is cash-in or cash-out refinancing. As people become old or retired, the mortgage is typically very low. This is confirmed by statistics of age, health condition and ownership duration, as well as house characteristic variables. In general, compared to households without a mortgage on the current house, those with a mortgage are younger (45.44 v.s. 57.42), more healthy (0.85 v.s. 0.76) and have lived in the house for a shorter period (9.69 v.s. 12.36). The same pattern is shown by *Age* and *OwnerDuration*. The average bought price of houses that is still mortgaged in 2012 is higher than that of non-mortgaged (1.93 v.s. 1.60). The average predicted price is 3.64 million with a median of 3 million. It indicates that non-mortgaged houses have experienced more price appreciation than mortgaged. Plausibly, older people bought their houses long time ago, so their houses exhibit larger price increase after purchase but their original mortgages have been paid back in full. The income of mortgaged households is significantly higher than non-mortgaged (0.94 v.s. 0.81). This coincides with the significant salary increase especially for young people working in the oil industry in the past 20 years. The number of members of mortgaged households is higher than that of non-mortgaged households (3.21 v.s. 2.48), and the number of employed, educated, kids, and immigrants show similar patterns. The above results indicate that most differences between mortgaged

and non-mortgaged households can be attributed to age as well as how long the household has lived in the current house. Older people or people with long ownership duration are more likely to have paid back all their mortgages.

3 Home Equity-Based Cash-out Refinancing

In this section, we answer the question on whether there is significant cash-out in the norwegian housing market. We first through a simple model show how cash-out induces the positive association between current mortgage and price increase. We then run OLS regressions to verify such an association and discuss endogeneity concerns.

3.1 How Can We Identify the Cash-out Effect?

When a household buy a house, the bought price consists of two parts: mortgage (henceforth called "*OriginalMortgage*") and down payment. At the purchasing time, down payment accounts for all home equity. Over time, home equity increases, as the household gradually pay back the original mortgage according to the payment schedule specified in the mortgage contract or as the market price of the house increases. In some cases, the household may refinance the loan and raise the amount of mortgage against increased home equity, while use cash taken out of the increased mortgage for consumption or other expenses. This cash-out through home equity-based refinancing is the focus of our study.

We define cash-out as

$$Cash\text{-}out = CurrentMortgage - (OriginalMortgage - PaidMortgage) \tag{1}$$

Since cash-out is backed on house price increase at the time of refinancing, it is roughly a proportion (say γ_1, $\gamma_1 \leq 1$) of house price increase. The original mortgage is a proportion (say γ_2, $\gamma_2 \leq 1$) of the bought price, and the paid mortgage is equal to the annual payment multiplied by ownership duration. For simplicity, assuming a 30-year maturity and a linear payment schedule of the original mortgage,[10] we have

[10]We use the linear payment schedule only to illustrate our idea briefly. In practice, most mortgage loans use a straight-line amortization schedule, instead of a linear payment schedule. When estimating total cash-out in section 3.3, we use straight-line amortization schedules.

$$CurrentMortgage = \gamma_1 \times \big(CurrentPrice - BoughtPrice\big) + \gamma_2 \times BoughtPrice - \frac{OwnerDuration}{30} \times \gamma_2 \times BoughtPrice \tag{2}$$

Scale both sides of Equation (2) by the *BoughtPrice* and we have

$$\frac{CurrentMortgage}{BoughtPrice} = \gamma_1 \times \frac{CurrentPrice}{BoughtPrice} - \gamma_2 \times \frac{OwnerDuration}{30} + (\gamma_2 - \gamma_1) \tag{3}$$

If there is no cash-out, instead of having Equation (3), we have

$$\frac{CurrentMortgage}{BoughtPrice} = -\gamma_2 \times \frac{OwnerDuration}{30} + \gamma_2 \tag{4}$$

Comparing Equation (3) and Equation (4), we see that current mortgage (scaled by the bought price) is related to current price or price increase conditional on the presence of cash-out. If there is no cash-out, $\frac{CurrentMortgage}{BoughtPrice}$ is only a function of ownership duration. Therefore, to capture the existence of a significant cash-out effect, we specify the following empirical model.

$$log\Big(\frac{CurrentMortgage}{BoughtPrice}\Big)_{ij} = \alpha + \beta_1 \cdot \log\Big(\frac{PredictedPrice}{BoughtPrice}\Big)_{ij} + \beta_2 \cdot OwnerDuration_{ij} + \Gamma X_{ij} + \mu_j + \epsilon_{ij} \tag{5}$$

where X denote all relevant control variables, including both house characteristics and household characteristics, and μ is region fixed effects. To reduce skewness, we take the logarithm of the two main variables. Our null hypothesis is: $\beta_1 = 0$ or there is no cash-out. A significantly positive β_1 indicates the presence of cash-out in the Norwegian housing market.

In the above empirical model, the current market price of the house is measured by the predicted price, reported by participants in the survey. One caveat here is that the predicted price could be different from the market value of the house if the participant overvalues or undervalues her own house. In Norway, almost all dwellings sold are recorded in *Finn.no* - an online business platform for real estate trading. All contract information, including price, location, type, as well as a thorough description of dwelling conditions, is available online to the public. Everyone can check the information and track the trend of price changes in her

area in the past 12 months. Therefore, we would think the predicted price is a good proxy for the current market value of the house.

3.2 Cash-out in the Norwegian Housing Market

We now investigate cash-out refinancing by taking the empirical model in Equation (11) to data. We first show a positive association between current mortgage and predicted price with OLS regressions, and then discuss potential omitted variables and endogeneity issues.

3.2.1 *OLS Regression Results*

Table 2 reports the results of OLS regressions where the dependent variable is $\log \frac{CurrentMortgage}{BoughtPrice}$ in Column (1)-(4) and $\log\big(1+\frac{CurrentMortgage}{BoughtPrice}\big)$ in Column (5)-(7) . We include only house characteristic variables in Column (1), while Column (2) as the baseline regression has both house and household characteristic variables. In both columns, the coefficient of $\log PriceIncrease$ is significantly positive with high t-values, indicating the presence of cash-out in the Norwegian housing market. In particular, a 1% increase of house price is associated with a 0.7% increase of current mortgage. This figure is economically very significant.

In Norway, there are so called "senior loans" for old people, which are secured on dwelling for homeowners above 60 years old. Senior loans allow the old to cash out all their home equity before death and are disbursed through one single payment or monthly disbursements. If home value is lower than outstanding mortgage at maturity (either death or when the owner moves to a nursing home), the bank covers the loss. To check whether our OLS results are mainly driven by "senior loans", we run the baseline regression but include only households with $Age \leq 67$ in Column (3) and with $Age \leq 60$ in Column (4) respectively. The retirement age is 67 in the country. In both columns, the coefficient of $\log PriceIncrease$ has little change in terms of both statistical and economical significance levels. Our results consistently confirm the hypothesis that there is cash-out in the Norwegian housing market.

In all four columns, ownership duration has a negative coefficient. This is consistent with the fact that a household pays back the original mortgage over time, and the remaining mortgage is lower if the household has lived in the house for a longer period. Age and $Urban$ also have a significantly negative sign, indicating that older people and people living in

cities have lower mortgages relative to the bought price. The positive sign of $NumProperty$ shows that people having more properties borrowed more. Most other control variables are insignificant. In all regressions of the table, we control for region fixed effects.[11]

Our above results are based on mortgaged households only, because zero-mortgage generates missing values of the dependent variable when taking the logarithm. In order to check whether the results are robust to including non-mortgaged households, we run the same regressions but using $\log(1+\frac{CurrentMortgage}{BoughtPrice})$ as the dependent variable and report the results in Column (5)-(7) of Table 2. No matter whether we use the full sample or the sample with $Age \leq 67$ or $Age \leq 60$, the results suggest the presence of a significant cash-out effect.

3.2.2 *Difference across Household Groups*

We further examine whether cash-out is done only by certain groups of households. We run the baseline regression on subsamples split according to household ownership duration, whether to live in urban areas, income, health condition, gender, family size, number of employed members, number of high-educated members, and whether to have kid(s) or immigrant(s). The results are reported in Table 3.

Cash-out refinancing includes a fixed cost, so we would guess that only after a few years of purchase, people start cashing out against increased home-equity. Column (1) and (2) of Table 3 show significant cash-out effect for both subgroups of households with different ownership duration. There is slight difference between the coefficients of the two columns, indicating households with longer ownership seem to cash out more. However, the difference is not significant. Possibly, the rapid rise of housing prices in Norway in the past 20 years makes the fixed cost of cash-out refinancing negligible. This is also consistent with the fact that in the mid-2000s, banks started offering flexible credit lines to mortgage borrowers backed by home equity, which largely facilitate cash-out refinancing in Norway.

Other results in Column (4)-(20) show that the cash-out effect is prevalent among all groups of households in Norway. Instead, evidence from countries like US and UK suggests that cash-out is mainly limited to credit-constrained households (e.g. Hurst and Stafford,

[11]There are seven regions in the data: Akershus, Sør-Østlandet, Hedmark and Oppland, Agder and Rogaland, Vestlandet, Trøndelag, Nord-Norge.

2004; Aron et al., 2012; Browning et al., 2013). The difference across subgroups is significant only for those split by *Urban* and *NumHighEdu*. First, the cash-out effect is larger for households living in urban areas than those living in rural areas. People in cities probably enjoy living in a modern society. Cash-out is used for excessive consumption, travelling or buying vacation cabins in mountains or near to the beach.

Second, the cash-out effect is more pronounced for high-educated people. Laibson (1997) argues that homeowners with limited self-control may aggressively borrow against increased access to housing wealth in order to finance current consumption. Our results indicate that limited self-control cannot be the main reason for cash-out in Norway. In untabulated results, we run the same subgroup regressions including households with high (e.g. >80%) loan-to-value ratios (i.e., LTV$\equiv \frac{CurrentMortgage}{PredictedPrice}$) and find similar results. Furthermore, Duca and Kumar (2014) report that education reduces the likelihood of home equity withdraw in the U.S. We do not have data to directly test the effect of education. In our regressions, education slightly reduces the loan-to-value ratio, but it is never significant.

3.2.3 *Potential Omitted Variables*

The OLS results establish a positive association between current mortgage and price increase, which is consistent with the presence of significant cash-out. However, the positive association could be subject to reverse causality or omitted variable bias, though we have already controlled region fixed effects to mitigate biases due to region-level omitted variables. To further establish the causal effect of price increase on current mortgage, we need a more sophisticated identification strategy. In the current section, we first discuss potential omitted variables and check whether their inclusion changes our results, and then employ an instrument variable approach to identify the causal effect. The results are reported in Table 4, where Column (1) of the table repeats our baseline regression.

The Renovation Channel. It is possible that people withdraw home equity in order to renovate their houses. In this case, as renovation increases house price, the observed positive association between current mortgage and predicted price could be due to a reversed renovation channel other than cashing out based on house price increase. The survey asks whether in the past year the household renovated their house and how much was spent in it. Data

show that 46.5% (1,281) of households spent money renovating their house and the average spending is NOK 67,238 and the median is NOK 25,000. To examine whether renovation changes our results, we control for renovation by including the variable, $\log(1+\frac{Renovation}{BoughtPrice})$, in our regressions. The results are shown in Column (2)-(3) of Table 4. In Column (2), we include all households, even those who did not renovate their houses in the past year, while in Column (3) we include only the 46.5% observations with positive renovation. The results suggest that no matter whether renovation is controlled, the high significance of $\log PriceIncrease$ is maintained. In Column (3), the coefficient of $\log PriceIncrease$ exhibits a slight drop from Column (1), indicating that the renovation channel is possibly present but is unlikely to change our main conclusions.[12]

Income Growth. As Mian and Sufi (2011) argue, omitted time-varying factors, such as changes in productivity or permanent income, may drive both house prices and borrowing behavior. With only one-year data, we are not able to compute individual expected income growth, but we have controlled for household income in OLS regressions that has no significant effect. We hence include, as a control in our regression, the average region-level income growth in the past 4 years (after the crisis) in Column (4) of Table 4. Income growth has a positive coefficient on current mortgage, but the coefficient of $\log PriceIncrease$ is even larger.

3.2.4 *Instrument Variable Estimations*

Individual income growth can be highly heterogenous within a region, so it may not be sufficient to exclude omitted variable bias by controlling expected region-level income growth in our regression. We further employ an instrument variable (IV) approach to identify the causal effect of price increase on current mortgage. Our first instrument variable is the average price increase at the region level. Intuitively, individual house price increase is to a large extent determined by the house location and is hence highly correlated to its average of the same region. Instead, individual mortgage choice is mostly determined by variables at the individual level, such as house or household properties, and is unlikely linked to house location except through the house-price channel. In other words, both the relevance and exgogeneity conditions of instrument variables are satisfied. We run a Two-stage Least

[12]Renovation in earlier years could also influence the predicted price but, given the limited data availability, we can only use the renovation information in the past one year.

Square regression using the average price increase, *AvgIncrease*, as the IV for individual price increase. The results are reported in Column (5)-(6) of Table 4. In the first-stage regression in Column (6), *AvgIncrease* significantly predicts individual price increase, indicating that the instrument satisfies the relevance condition of instruments. In Column (5), the significantly positive coefficient of log*PriceIncrease* in the second stage regression confirms the cash-out effect that we indentified earlier.

Furthermore, we use the elasticity of house supply at the region level as the instrument variable. As argued by Mian and Sufi (2011), areas with elastic housing supply should experience only modest increase in house prices in response to large shifts in the demand for housing because housing supply can be expanded relatively easily. In contrast, inelastic housing supply areas should experience large house price changes in response to the same housing demand shock. We collect region-level data on started building work measured by the utility floor space (m^2) in 2005-2012 from the Statistics Norway. We use "started building work" instead of "completed building work" to construct the instrument because it takes on average more than one year to plan and construct a house in Norway, so "started building work" reflects housing supply as a response to price change more closely. We compute the percentage increase of housing supply for every percentage increase of the house prices in each region annually, and then take the average during the period as the house supply elasticity (*SupplyElasticity*). The 2SLS estimation results, reported in Column (7)-(8) of Table 4, again confirm the causal effect of price increase on the current mortgage level. The results are robust if we use started building work measured by the number of dwellings instead of the utility floor space.

To verify the validity of using 2SLS, we examined the suitability of the instruments and the appropriateness of using an instrumental variable approach. First, the results of test for whether we have weak instrument problems, with a F-value equalling to 31.94 for *AvgIncrease* and 21.84 for *SupplyElasticity*, reject the hypothesis that the instruments suffer from such problems. Second, the Wu-Hausman test and the Durbin score with p-values equal to 0.32 and 0.12 for the two instruments respectively show that average price increase and house supply elasticity are exogenous to mortgage decisions. The Wooldridge's robust score test and the robust regression-based test after 2SLS estimation with a robust Variance-covariance

matrix of the estimators deliver similar conclusions. To sum up, all above endogeneity and relevance tests points to the validity of our instruments.

3.3 Quantifying the Size of Cash-out

Cash-out raises household debt levels and hence contributes to the high debt-to-income ratio. The survey data lack information on the amount of original mortgage and payment schedule, so it is impossible to compute the exact amount of cash-out. However, the analysis in Section 3.1 enables us to roughly quantify the size of cash-out. We calculate a lower bound of cash-out in the following way. Recall that

$$Cash\text{-}out = CurrentMortgage - (OriginalMortgage - PaidMortgage) \tag{6}$$

First, although we have no information on the original mortgage, we have information on the bought price, which is always not lower than the original mortgage. Therefore, we replace *OriginalMortgage* by *BoughtPrice* in Equation (6). Second, in Norway, most mortgage loans use a straight-line amortization schedule, instead of a linear payment schedule. We thus assume straight-line amortization schedules and a mortgage rate 4.5% to estimate *PaidMortgage*. With above assumptions, we have a lower bound of cash-out, defined as

$$LowerBound \equiv CurrentMortgage - BoughtPrice + Estimated\ PaidMortgage \tag{7}$$

This lower bound allows us to roughly estimate the aggregate cash-out for the 2,787 households in our sample. In the data, the sum of all lower bounds is 1,467 million.[13] It indicates that on average, each household cashes out over half a million. Given that the sum of all current mortgages is 4,188 million, cash-out accounts for at least 35% of total current mortgages. The lower bound of cash-out differs significantly across subgroups of households with different ownership durations. For example, cash-out is 14.9% of current mortgages for households who have lived in the current house for no more than 6 years, but the figure changes to 33.8%, 67.6%, and 92.8% corresponding to ownership of 7-12, 13-20, and >20 years. Namely, for households who have lived in the current house for over 12 years, cash-out accounts for the majority of outstanding mortgages.

[13]When calculating the sum of the lower bound, we take all negative values as zero.

The above lower bound is sensitive to the assumed mortgage rate. We check whether such an assumption drives our results by defining

$$LowerBound \equiv CurrentMortgage - BoughtPrice \tag{8}$$

With this definition, we find that the sum of lower bounds of all households is 989 million, which is still above 21% of total current mortgages. To exclude the effect of "senior loans" defined in Section 3.2.1, we further compute the lower bounds of households with $Age \leq 60$. The percentages above are nearly the same after excluding old people, indicating that our results are not driven by senior loans.

To sum up, cash-out through home equity-based refinancing accounts for a significant part of current mortgages in Norway. This is also consistent with the 2012 survey on bank's lending practice, conducted by the Financial Supervisory Authority of Norway. According to the survey, only 36% of new issued loans are used to buy a house, while the remaining 64% were due to other purposes, mostly refinancing (Boliglånsundersøkelsen 2012).[14] Since mortgages are the main form of household debt, we conclude that cash-out significantly contributes to the steep increase of the Norwegian household debt-to-income ratio in past decades.[15]

3.4 How do households spend cash-out?

How do households spend the money borrowed against home equity? The question is important in order to understand the real effects of the home equity-based borrowing channel. If cash-out is used for consumption, it stimulates economic growth in the short run, but this effect on economic growth is unsustainable. Households with large cash-out may become over-indebted and thus more vulnerable to negative economic shocks (e.g. Iacoviello, 2005; Mian et al., 2013). However, if households take out home equity to retire more costly debt such as auto loans, cash-out is not dangerous at all.

In our data, we do not have information on how cash-out is spent. However, another

[14]See *Boliglånsundersøkelsen 2012*: http://www.finanstilsynet.no/.

[15]Home mortgages account for more than 75% of Household debt in Norway according to Statistics Norway (SSB).

survey conducted by TNS Gallup (a survey firm in Norway) in 2010, on behalf of the Financial Supervisory Authority of Norway, investigates the main purpose of new issued loans. The survey was conducted among a sample of borrowers who have taken out a mortgage secured on dwelling in the past year. For ordinary repayment loans, investment in dwelling was the purpose of only 36% of new issued mortgages. Home refurbishment was reported by 21% of the borrowers, and purchase of a car, boat or cabin was reported by 22%. For home equity credit lines, the figures are 20%, 33% and 32% respectively. Overall, the loan purpose survey suggests that consumer spending is one of the main purposes of cash-out.

Furthermore, as the above report shows, an important channel of spending cash-out is to reinvest it in the housing sector, e.g., renovating the current house. Ebner (2013) reports that in Holland most of cash-out is reinvested in the housing sector and only a small share used to finance consumption expenditure. Our earlier analysis shows that renovation on the current house could be a potential channel, but it is unlikely to be the main one. In recent years, Norwegian households have bought a large number of summer cabins. We now check whether cash-out is mainly used to buy or to renovate other properties. Our data show that about 12% (334/2,787) of households have other properties. We run our main regressions of Table 2 on the subsamples that consist of households with and without other properties respectively. Table 5 reports the regression results. Column (1) is for the subsample consisting of households with other properties and Column (2) is for those without. We see that the cash-out effect remains significant for households without other properties, indicating that our results are not driven by the other-properties channel. The results are robust to using the subsample of households with $Age \leq 67$ or $Age \leq 60$.

The literature identifies many other ways for households to spend cash-out. Lovenheim (2011) finds that households in the US used their housing wealth to finance postsecondary school enrollment in the 2000s. However, this could not be the case in Norway, because all Norwegian students get loans from the central government with a very low interest rate. Mian and Sufi (2011) show that credit card balances do not increase with house price increase in the US. Based on this finding, they conclude that consumers do not use their home equity-based borrowing to pay down expensive credit card balances. Lovenheim and Mumford (2013) find that increase in housing wealth raise the probability of having a child. Insofar

we cannot access similar data in Norway and are hence not able to conduct similar analyses. Discussions with practical professionals show that these are unlikely be the main purposes of cash-out in Norway.

4 Cash-out and Household Financial Difficulties

Mian and Sufi (2011) find that cash-out before the 2007 financial crisis is subsequently associated with higher default rates for low-credit-quality borrowers in the US. As cash-out is a substantial part of Norwegian household debt as well, an interesting question is: does this cash-out have real effects on the household or the economy as a whole? For example, people may use cash-out to buy cars or summer cabins, to travel, as well as to increase daily consumption. Since these consumptions are largely irreversible, when cash-out is spent out, the household may have to cut consumption especially if new cash-out is impossible for low increase or even decrease in house prices. This is likely to induce household financial difficulties. Lack of time-series data on household financial difficulties does not allow us to examine whether there is a causal effect of cash-out on financial difficulties, but we document a significant association between them in the following sections.

4.1 Household Financial Difficulties

The 2012 Survey on Living Conditions for Norwegian Residents asked two questions concerning household financial conditions:

Question 1: *How difficult to deal with your daily payments?*

Question 2: *Can you handle an extra NOK 10,000 unexpected expenses?*

For the first question, attendants can choose from "very difficult", "difficult", "relatively difficult", "relatively easy", "easy", or "very easy", while for the second question, they can choose from "yes" or "no". Table 6 shows the summary of answers to each question. Respectively 11.3% (314/2,785) and 12.2% (339/2,782) of households have a negative answer to the first and second questions. To gauge household financial difficulties, we create two dummy variables utilizing information from these two survey questions. *Difficulty1* is equal to one if the answer to Question 1 is "very difficult", "difficult" or "relatively difficult" and zero otherwise. *Difficulty2* is equal to one if the answer to Question 2 is "no" and zero

otherwise. The two dummies have only a moderate correlation, 0.4432, indicating that they capture different aspects of household financial difficulties. For example, a rich household facing payment difficulties who answer Question 1 with "difficult" could answer Question 2 with "yes", because NOK 10,000 are a small amount for them. To account for both kinds of difficulties, we create the third dummy, *Difficulty3*, which is equal to one if either of two above dummies is equal to one. According to *Difficulty3*, 17.5% (488/2,787) households face financial difficulties.

The survey also asked a question concerning household living conditions:

Question 3: *How do you think about your house size?*

Answers to this question consist of "too large", "correct-sized" and "too small". Table 6 shows that 9.0% of households have too small houses, while 10.0% have too large ones. In case of an unexpected shock to income and house prices, households with "too large" house size can move to a smaller house while keeping the previous consumption level, but it is not easy for households with "too small" and "correct-sized" houses to do so. Therefore, households with too small or correct-sized houses are more likely to cut consumption when facing an unexpected economic shock that reduces both house prices and income. In the data, around 87% households belong to this class. We create one more dummies as indicators for financial difficulties of households. *Difficulty4* is equal to one if the house is "correct-sized" or "too small" and *Difficulty3*=1. This new dummy variable reflects not only household financial difficulties but also the flexibility of household to modify their living conditions in case of a negative economic shock, so they are more likely to capture the link between household mortgaging behaviour and financial conditions.

4.2 The CashOut-to-Income and Mortgage-to-Income Ratios

To examine how financial difficulties are associated with cash-out, we need a proper measure of cash-out. As being discussed in section 3.3, the accurate amount of cash-out is not available due to data constraints, but we compute a lower bound of cash-out. Our following analysis relies on the lower bound. To make it cross-sectionally comparable, we

scale this lower bound by household income and create the following variable:

$$CashOut\text{-}to\text{-}Income = \frac{CashOut}{TotalIncome} \tag{9}$$

We further define the household mortgage-to-income ratio as

$$Mortgage\text{-}to\text{-}Income = \frac{CurrentMortgage}{TotalIncome} \tag{10}$$

The *Mortgage-to-Income* ratio captures how indebted the household is, while the *CashOut-to-Income* ratio captures how much the household have cashed out against home equity since home purchase. Note that cash-out is only one part of current mortgage. It is imaginable that, although cash-out contributes significantly to current mortgage according to our previous findings, a larger *CashOut-to-Income* ratio does not necessarily mean a larger *Mortgage-to-Income* ratio, because the amount of original mortgage plays an important role in driving the two ratios. This is confirmed by the following statistics.

We summarize in Table 7 the main variables and the four indicators for financial difficulties across subsamples split by the four quartiles of the *CashOut-to-Income* ratio and the *Mortgage-to-Income* ratio. In Panel A, the first two rows summarize the two ratios. First, the average *CashOut-to-Income* ratio within its highest quarter is 3.13, while the corresponding average *Mortgage-to-Income* ratio is 3.97. Second, the two ratios does not always move towards the same direction. For example, the average *Mortgage-to-Income* ratio is 1.81, 1.60, 1.68, 3.13 respectively within the four quarters of the sample split according to the *CashOut-to-Income* ratio. This is also confirmed by the moderately low correlation, 0.209, between the two ratios. The rest rows summarize other variables, which do not show consistent patterns according to the two ratios either. For example, the bought price is increasing with the *Mortgage-to-Income* ratio, but decreasing with the *CashOut-to-Income* ratio. The ownership duration shows exactly an opposite direction to the bought price. In Panel B, all four indicators for financial difficulties are monotonically increasing in both the *CashOut-to-Income* ratio and the *Mortgage-to-Income* ratio. It seems that the slope of financial difficulties with the latter is higher than that with the former.

4.3 Is Cash-out Related to Financial Difficulties?

The univariate results in Table 7 show that cash-out is positively associated with household financial difficulties. We now confirm this finding through multivariate tests employing the following model:

$$\textit{Difficulty}_{ij} = \alpha + \beta_1 \cdot \textit{CashOut-to-Income}_{ij} + \Gamma X_{ij} + \mu_j + \epsilon_{ij} \tag{11}$$

where one of the proxies for payment difficulties, *Difficulty3* or *Difficulty4*, is the dependent variable, X denote all control variables and μ is region fixed effects. Estimation results are reported in Table 8.

First, in Column (1) and (2) of Table 8, the *CashOut-to-Income* ratio enters the regressions with a significantly positive coefficient, indicating that household financial difficulties are positively associated with cash-out. In particular, a one-standard-deviation increase of the *CashOut-to-Income* ratio (1.00) raises the probability to have financial difficulties by 24.6% (4.3 percentage points), compared with the sample average (0.175). Lack of time-series data on household financial difficulties does not allow us to argue for causality. It is possible that those who previously had financial difficulties cashed out most and continue having difficulties. However, cash-out in our regression in a stock variable showing household mortgage choices since house purchase, while financial difficulties are reported in the current survey. This time difference points to the predictability of cash-out on household financial difficulties. At the minimum, cash-out is a good indicator of household financial difficulties.

Second, to allow for non-linear effect from cash-out and facilitate interpretation of the results, we in Column (3) and (4) do not include the continuous ratio variable but four level dummies for cash-out, *CashOutLevel1-CashOutLevel4*. Each dummy is equal to one if the *CashOut-to-Income* ratio lies in the corresponding quarter. Results confirm the positive association between cash-out and financial difficulties. For example, moving from the first quarter to the fourth quarter of the *CashOut-to-Income* ratio, the probability to have financial difficulties increases by 48%.

Finally, we in Column (5) and (6) run a horse race by including both the *Mortgage-to-Income* ratio and the *CashOut-to-Income* ratio in the same regression. The high Nor-

wegian debt-to-income ratio is one of the main reasons for which Paul Krugman warned the Norwegian housing bubble. The data allow us to compute a similar ratio, the household *Mortgage-to-Income* ratio, which as shown in Panel A of Table 7 is positively associated with all the four indicators for household financial difficulties. As the *CashOut-to-Income* ratio is also significantly related to financial difficulties, a natural question is: which one is more informative for household financial difficulties? From Column (5) and (6), when both ratios are included in the same regression, the *CashOut-to-Income* ratio remains highly significant while the *Mortgage-to-Income* ratio is insignificant both statistically and economically. The results suggest that cash-out is a more informative indicator for household financial difficulties. One explanation for this finding is that outstanding mortgage have three components: original mortgage, paid mortgage and cash-out. The first two reflect mortgage decisions long time ago so, compared to cash-out, they convey noisier information about current household financial conditions. Since financial difficulties indicate higher future default rate of the household and potential danger for the economy under an unexpected shock, cash-out is an informative indicator for future default and coming danger.

Some other control variables show consistent significance and reasonable directions. Financial difficulties are negatively associated with ownership duration, household income, *Age*, *Gender*, *Urban* and health condition, while they are positively related to the number of members and the number of immigrants in the household.

4.4 Robustness

We further check whether the positive relationship between cash-out and financial difficulties is robust across different groups of households. We run the same regression using subsamples split according to household ownership duration, whether to live in urban areas, income, gender, family size, number of employed members, number of high-educated members, and whether to have kid(s) or immigrant(s). Results, reported in Table 9 show that the relationship between cash-out and financial difficulties is significantly positive for all groups of households and, except the two subsamples split according to *Urban*, there is no statistically significant difference across subsamples.

Column (3) and (4) show that the positive relationship between cash-out and financial

difficulties is significantly higher for households living in rural areas. In Norway, people living in rural areas have lower income, relative to those living in urban areas. The difference may thus capture an income effect. This is confirmed by Column (5) and (6), where the subsamples are created by splitting the full sample according to household income. The coefficient of cash-out in Column (5) is almost three times that in Column (6), although the difference is not statistically significant. The effect from education shown in Column (13) and (14) is possibly also an income effect.

4.5 Policy Implications

Our results have important and interesting policy implications. During the last years, several European countries have introduced caps on loan-to-value (LTV) ratios to dampen household leverage and constrain credit growth and property price growth.[16] In 2010, the Norwegian Financial Supervisory Authority introduced a LTV cap of 90% for home buyers, and the limit was lowered to 85% in 2011. However, the Supervisory Authority can only issue guidelines, and so far the Norwegian Ministry of Finance has not imposed binding LTV caps. Regulations that prevent households from buying their own apartment are unpopular with the general public, and media regularly highlights unfortunately and unfair consequences of loan ratio caps for specific household groups.

Our results suggest the emphasis on LTV and loan-to-income ratios may be misplaced. We find that that the *CashOut-to-Income* ratio is more informative than the *Mortgage-to-Income* ratio about household financial difficulties, suggesting that equity withdrawals should receive more attention from policy makers. In Norway, equity withdrawal loans are quantitatively important. It is a useful facility especially for older home owners, but may also conceal and exacerbate household affordability problems. The Norwegian Supervisory Authority has suggested that equity withdrawal loans should not raise the total mortgage above 65 % of property value, but binding regulations have so far not been introduced. The findings reported in this paper suggest that a cap on equity withdrawal loans is important, perhaps more important than a cap on the mortgage of new house buyers, for preventing excessive debt and future financial problems of households.

[16] See ECB *Financial Stability Review* (2014), available at www.ecb.europa.eu.

5 Conclusion

International Monetary Fund (IMF) warned in 2013 that Norway has one of the biggest housing bubbles in the world with prices overvalued by up to 40%.[17] One of the main evidence, cited by IMF, is the fact that a certain segment of households is heavily indebted with debt to income ratio higher than five. After the IMF report was announced, the Norwegian housing prices have continued rising. Popular debates were initiated in Norway concerning the housing bubble. Contributing to the debate, we study one important part of household debt, home equity-based cash-out. We aim to answer the following questions: Is there significant cash-out in Norway and does it link to household financial difficulties? Our study has two main findings. First, along with the soaring housing prices, mortgage borrowers significantly extended their debt levels through home equity-based refinancing. Cash-out is at least one-third of total outstanding household mortgages and hence substantially contributed to the high debt-to-income ratio. Second, mortgage borrowers with large cash-out are more likely to have financial difficulties. As cash-out refinancing is blamed to be one of the key drivers of the subprime crisis in the United States, our findings have interesting policy implications.

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[17]See *IMF Country Report* No. 13/272, available at www.imf.org.

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Appendix I: Variable Definitions

Variables	Definition
House Characteristics	
HaveMortgage	Dummy = 1 if the household have mortgage.
BoughtPrice	The original price at which the household bought their house.
PredictedPrice	The currently predicted price of the house.
CurrentMortgage	The current mortgage of the house.
OwnerDuration	The duration in which the household live in the house.
PriceIncrease	= PredictedPrice/BoughtPrice
Household Characteristics	
CashOut	$CurrentMortgage - BoughtPrice \times \big(1 - OwnerDuration/30\big)$. This is the lower bound of cash-out by assuming a 30-year maturity and a linear payment schedule of the original mortgage.
CashOut-to-Income	= CashOut/TotalIncome
CashOutLevel1	Dummy= 1 if CashOut-to-Income lies in the first lowest quarter.
CashOutLevel2	Dummy= 1 if CashOut-to-Income lies in the second lowest quarter.
CashOutLevel3	Dummy= 1 if CashOut-to-Income lies in the third lowest quarter.
CashOutLevel4	Dummy= 1 if CashOut-to-Income lies in the fourth lowest quarter.
Mortgage-to-Income	= CurrentMortgage/TotalIncome
NumProperty	The number of properties that the household own.
TotalIncome	Total income of all household members.
Income1	Dummy = 1 if TotalIncome lies in the lowest tercile.
Income2	Dummy = 1 if TotalIncome lies in the middle tercile.
Income3	Dummy = 1 if TotalIncome lies in the largest tercile.
Age	The age of the person who has the highest income in the household.
Gender	The gender of the person who has the highest income in the household.
Health	Dummy = 1 if the interviewee answers “healthy”.
NumMembers	The number of household members living in the house.
NumHighEdu	The number of persons with education higher than high school.
NumEmployed	The number of persons under employment.
NumKids	The number of kids (younger than 16) in the household.
NumOld	The number of old persons (older than 67) in the household.
NumImmigrants	The number of immigrants in the household.
Indicators for Financial Difficulties	
Difficulty1	Dummy = 1 if the household have difficulties in dealing with payments;
Difficulty2	Dummy = 1 if the household cannot handle a 10,000 unexpected expenses;
Difficulty3	Dummy = 1 if Difficulty1 = 1 or Difficulty2 = 1;
Difficulty4	Dummy = 1 if the house is "correct-sized" or “too small” and Difficulty1 = 1.

Appendix II: Main Questions in the Survey

(a) Do the household have a loan secured on the dwelling? (Yes; No.)

(b) Remaining debt/down payment for all loans secured on the dwelling.

(c) How much did you pay for your current dwelling? (Nearest 100 000 NOK)

(d) Home ownership (full ownership by the household, shared ownership, or renter).

(e) Which year did you became the owner(s) of the property?

(r) Can you estimate the selling price of the dwelling if you sold today? (Nearest 100 000 NOK)

(g) Do you own other properties in Norway or abroad? (Yes, one property; Yes, two properties; Yes, three properties or more; No.)

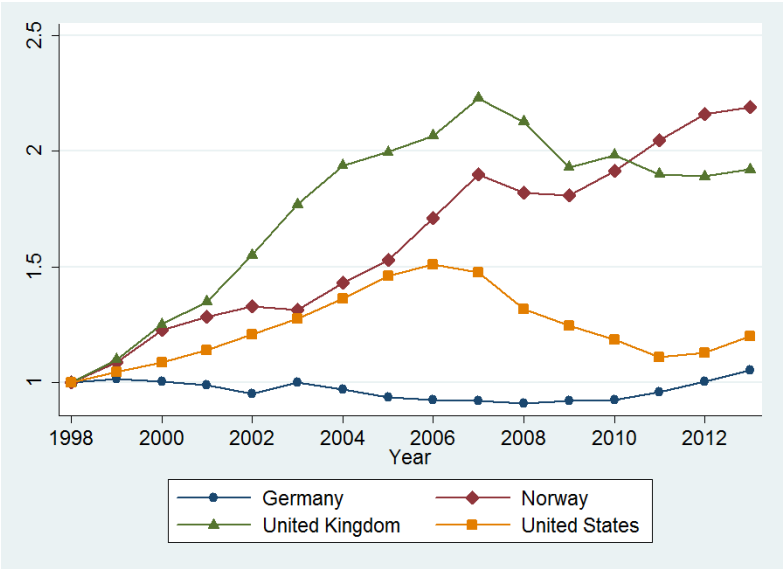
(h) Approximately, how many square meters is your house? (Total area inside the walls.)

(i) How difficult to deal with your payments? (Very difficult; difficult; relatively difficult; relatively easy; easy; very easy.)

(j) Are you able to pay an unexpected expenditure of 10,000? (Yes; no.)

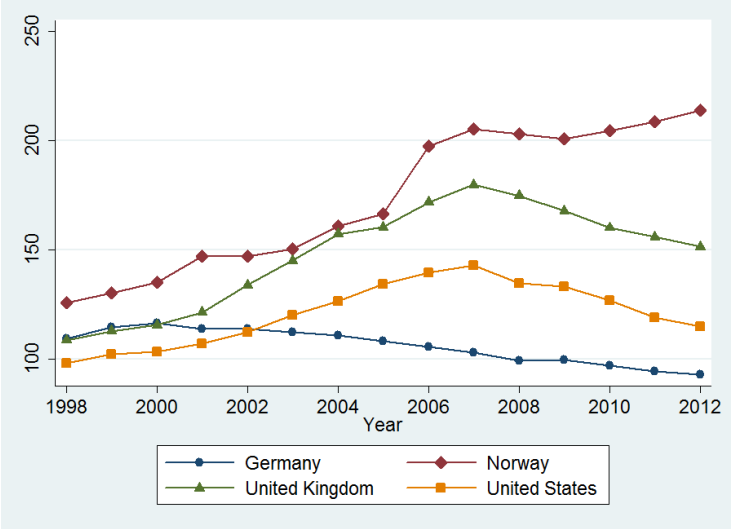
(k) How do you think about your house size? (Too small; correct size; too large.)

Figure 1: House prices and household debt-to-income ratio in U.S., U.K., Germany and Norway in 1998-2012



a) Real house prices 1998-2013, scaled by 1998

(*Sources: OECD*)



b) The ratio of household debt to net disposable income

(*Sources: OECD*)

Table 1: Summary Statistics of Main Variables

This table presents summary statistics for the main variables used in our analysis. All variables are defined in Appendix I.

Panel A: All households

Variable	Mean	Median	Min	Max	SD	N
HaveMortgage	0.84	1.00	0.00	1.00	0.36	2,787
BoughtPrice	1.91	1.50	0.00	80.00	2.22	2,787
PredictedPrice	3.64	3.00	0.42	90.00	3.28	2,787
PriceIncrease	3.05	1.88	0.66	71.43	5.12	2,787
TotalIncome	0.92	0.90	-0.46	1.78	0.40	2,787
OwnerDuration	10.11	9.00	0.00	25.00	7.08	2,787
HouseSize	170.9	150.	11.0	999.0	108.0	2,787
Age	47.33	46.00	19.00	94.00	12.45	2,783
Gender	0.69	1.00	0.00	1.00	0.46	2,785
Health	0.83	1.00	0.00	1.00	0.37	2,776
Urban	0.82	1.00	0.00	1.00	0.38	2,787
NumProperty	1.16	1.00	1.00	4.00	0.47	2,787
NumMemers	3.10	3.00	1.00	8.00	1.39	2,787
NumHighEdu	0.52	0.00	0.00	3.00	0.57	2,787
NumEmployed	1.59	2.00	0.00	7.00	0.78	2,787
NumKids	0.86	0.00	0.00	6.00	1.06	2,787
NumImmigrants	0.20	0.00	0.00	7.00	0.75	2,787

Panel B: Mortgaged v.s. Non-mortgaged Households

	Mortgaged			Non-mortgaged		
	Mean	Median	SD	Mean	Median	SD
BoughtPrice	1.93	1.50	1.69	1.60	1.20	1.33
PredictedPrice	3.64	3.00	2.80	3.36	3.00	2.11
PriceIncrease	2.85	1.83	4.24	3.10	1.33	8.30
CurrentMortgage	1.78	1.40	2.55	0.00	0.00	0.00
TotalIncome	0.94	0.92	0.39	0.81	0.76	0.42
OwnerDuration	9.69	8.00	6.92	12.36	13.00	7.50
Houseize	170.8	155.0	97.3	171.1	135.0	153.0
Age	45.44	45.00	11.12	57.42	57.00	14.22
Gender	0.69	1.00	0.46	0.68	1.00	0.47
Health	0.85	1.00	0.36	0.76	1.00	0.43
Urban	0.82	1.00	0.38	0.83	1.00	0.37
NumProperty	1.15	1.00	0.46	1.19	1.00	0.52
NumMemers	3.21	3.00	1.36	2.48	2.00	1.36
NumHighEdu	0.53	0.00	0.57	0.45	0.00	0.56
NumEmployed	1.68	2.00	0.71	1.08	1.00	0.90
NumKids	0.96	1.00	1.08	0.38	0.00	0.83
NumImmigrants	0.20	0.00	0.74	0.19	0.00	0.77

Table 2: Is There Significant Cash-out?

The table reports marginal effects from OLS regressions where the dependent variable is $\log(\frac{CurrentMortgage}{BoughtPrice})$ or $\log(1+\frac{CurrentMortgage}{BoughtPrice})$. A positive coefficient of $\log PriceIncrease$ indicates the presence of cash-out. The specifications are different in the used sample and the Y-variable, as indicated by column headers. Column (1)-(2) and (5) are for the full sample with different controls. Column (4) and (6) are for households with $Age \leq 67$, while column (5) and (7) are for households with $Age \leq 50$. All regressions include region fixed effects. An intercept is included but not reported. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, and t-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample	Full		Age≤67	Age≤60	Full	Age≤67	Age≤60
Y-Variable	$\log(\frac{CurrentMortgage}{BoughtPrice})$				$\log(1+\frac{CurrentMortgage}{BoughtPrice})$		
logPriceIncrease	**0.702*** **	**0.715*** **	**0.704*** **	**0.722*** **	**0.291*** **	**0.311*** **	**0.356*** **
	(22.15)	(23.29)	(22.49)	(22.34)	(21.80)	(21.81)	(23.08)
OwnerDuration	-0.025***	-0.013***	-0.014***	-0.015***	-0.007***	-0.008***	-0.012***
	(-8.45)	(-4.23)	(-4.27)	(-4.65)	(-4.96)	(-5.69)	(-7.53)
HouseSize	0.000	-0.000	-0.000*	-0.000*	-0.000**	-0.000***	-0.000***
	(0.08)	(-1.54)	(-1.92)	(-1.86)	(-2.33)	(-2.85)	(-2.97)
Income2		-0.070	-0.054	-0.033	-0.035	-0.027	-0.012
		(-1.50)	(-1.14)	(-0.70)	(-1.63)	(-1.17)	(-0.51)
Income3		-0.084	-0.080	-0.065	-0.019	-0.010	-0.001
		(-1.58)	(-1.50)	(-1.21)	(-0.76)	(-0.40)	(-0.05)
Age		-0.019***	-0.018***	-0.017***	-0.009***	-0.008***	-0.007***
		(-10.66)	(-9.25)	(-8.03)	(-11.73)	(-9.22)	(-6.57)
Gender		0.062*	0.062*	0.080**	0.017	0.013	0.030*
		(1.80)	(1.80)	(2.32)	(1.07)	(0.80)	(1.75)
Health		0.050	0.053	0.070	0.017	0.024	0.014
		(1.14)	(1.17)	(1.52)	(0.87)	(1.11)	(0.61)
Urban		-0.121***	-0.116***	-0.103**	-0.033*	-0.034*	-0.027
		(-2.86)	(-2.76)	(-2.44)	(-1.67)	(-1.69)	(-1.32)
NumProperty		0.103***	0.097***	0.107***	0.038**	0.038**	0.053***
		(3.08)	(2.88)	(3.09)	(2.49)	(2.39)	(3.13)
NumMembers		0.041*	0.048**	0.046**	0.018*	0.018*	0.013
		(1.84)	(2.15)	(2.09)	(1.71)	(1.69)	(1.17)
NumEmployed		0.048*	0.031	0.026	0.064***	0.054***	0.047***
		(1.79)	(1.11)	(0.92)	(5.17)	(4.11)	(3.44)
NumHighEdu		-0.021	-0.018	-0.010	-0.012	-0.016	-0.012
		(-0.72)	(-0.63)	(-0.35)	(-0.90)	(-1.15)	(-0.86)
NumKids		-0.028	-0.036	-0.035	-0.001	-0.001	0.003
		(-1.10)	(-1.40)	(-1.38)	(-0.05)	(-0.07)	(0.21)
NumImmigrants		0.013	0.005	-0.003	-0.010	-0.013	-0.017*
		(0.62)	(0.24)	(-0.16)	(-0.96)	(-1.29)	(-1.65)
Region Fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2348	2335	2256	2105	2772	2585	2349
adj. R^2	0.205	0.266	0.250	0.258	0.245	0.216	0.231

Table 3: Differences across Subsamples

The table reports marginal effects from OLS regressions where the dependent variable is $\log(\frac{CurrentMortgage}{BoughtPrice})$. We examine the cross-group difference of the positive association between price increase and current mortgage. We split the full sampe into two subsamples according to OwnerDuration, Urban, Income, Gender, household size, NumEmployed, NumHighEdu, whether the household have kid(s) and whether the household have immigrant(s), and run the same regression for each subsample. All control variables and an intercept are included but not reported. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, and t-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OwnerDuration		**Urban**		**Income**		**Gender**		**Health**	
	<=9	>9	=1	=0	Low	High	Male	Female	=0	=1
logPriceIncrease	0.689***	0.751***	0.749***	0.604***	0.689***	0.739***	0.695***	0.749***	0.696***	0.771***
	(17.07)	(15.79)	(20.62)	(10.75)	(16.79)	(16.16)	(18.21)	(14.34)	(19.99)	(10.98)
N	1307	1028	1916	419	1039	1296	1624	711	1981	354
Adj. R^2	0.258	0.261	0.263	0.227	0.284	0.248	0.252	0.296	0.258	0.296
Difference	insignificant		p=0.077		insignificant		insignificant		insignificant	

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Household Size		**NumEmployed**		**NumHighEdu**		**With Kid(s)**		**With Immigrant(s)**	
	Small	Large	<=1	>=2	=0	>=1	No	Yes	No	Yes
logPriceIncrease	0.677***	0.783***	0.677***	0.736***	0.660***	0.807***	0.670***	0.777***	0.723***	0.591***
	(16.83)	(16.01)	(13.50)	(18.92)	(16.78)	(16.22)	(16.69)	(15.25)	(21.66)	(7.28)
N	1258	1077	729	1606	1179	1156	1109	1226	2101	234
Adj. R^2	0.255	0.276	0.309	0.243	0.262	0.267	0.273	0.255	0.267	0.302
Difference	insignificant		insignificant		p=0.051		insignificant		insignificant	

Table 4: Endogeneity Concerns

The table reports marginal effects from OLS regressions where the dependent variable is $\log(\frac{CurrentMortgage}{BoughtPrice})$. We address the endogeneity concerns of the positive association between price increase and current mortgage, documented in Table 2. We use results of column (3) of Table 2 as the baseline and show them in column (1) of the current table. We check whether renovation results in a reverse causality in column (2)-(3), by adding $\log Renovation$ in the regression. Column (4) includes potential omitted variable, region-level income growth (*IncomeGrowth*) that is the average income growth rate of the region since 2007, as controls to mitigate potential bias. In column (5)-(9), we employ an instrument variable approach to identify the causal effect of price increase on mortgage choice. Column (5)-(6) use the average price increase (*AvgIncrease*) and (7)-(8) use the housing supply elasticity (*SupplyElasticity*), both at the region level, as the IV for individual price increase. The first-stage and second-stage results of 2SLS are resorted respectively, indicated by the column headers. The endogeneity and relevance tests are reported in the last three rows. Column (1)-(3) include region fixed effects. An intercept is included but not reported. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, and t-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Baseline	**Renovation**		**Growth**	**IV: AvgIncrease**		**IV: SupplyElasticity**	
		All Obs.	Renovation>0		2nd Stage	1st Stage	2nd Stage	1st Stage
logPriceIncrease	0.718***	0.713***	0.645***	0.723***	0.980***		1.212***	
	(23.41)	(22.89)	(13.86)	(23.76)	(3.68)		(3.63)	
logRenovation		0.001	0.044***		-0.002	0.006***	-0.003	0.005**
		(0.36)	(3.10)		(-0.46)	(2.91)	(-0.77)	(2.54)
IncomeGrowth2012				4.631***	4.984***	-1.50**	5.296***	-1.53**
				(4.89)	(4.84)	(-2.35)	(4.83)	(-2.39)
AvgIncrease						**0.167*** **		
						(5.95)		
SupplyElasticity								**-0.058*** **
								(-4.67)
(All other controls are included but not reported.)								
N	2348	2316	1281	2345	2326	2326	2326	2326
adj. R^2	0.205	0.262	0.235	0.263	0.237	0.425	0.178	0.423
Durbin chi2(1)						0.98 (p=0.32)		2.41 (p=0.12)
Wu-Hausman F(1,2309)						0.97 (p=0.32)		2.39 (p=0.12)
Relevance F(1,2310)					31.94		21.84	

Table 5: Do Household Spend the Money in Another Property?

The table reports marginal effects from OLS regressions where the dependent variable is $\log(\frac{CurrentMortgage}{BoughtPrice})$. We explore whether the household spend the cash-out in another property. We run the baseline regression for households with and without other property respectively and report the results in the two columns. Column (1) is for households with other property. All regressions include region fixed effects. An intercept is included but not reported. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, and t-values are in parentheses.

	(1) With Other Property	(2) Without Other Property
logPriceIncrease	0.663***	0.719***
	(7.64)	(21.75)
OwnerDuration	-0.016*	-0.013***
	(-1.73)	(-3.71)
HouseSize	0.000	-0.000
	(0.12)	(-1.53)
Income2	-0.142	-0.055
	(-0.91)	(-1.12)
Income3	-0.170	-0.074
	(-1.07)	(-1.30)
Age	-0.015***	-0.020***
	(-2.69)	(-10.50)
Gender	0.088	0.063*
	(0.77)	(1.75)
Health	0.064	0.047
	(0.47)	(1.00)
Urban	0.048	-0.152***
	(0.39)	(-3.35)
NumProperty	0.119	
	(1.50)	
NumMembers	-0.052	0.050**
	(-0.78)	(2.09)
NumEmployed	0.188**	0.029
	(2.13)	(1.01)
NumHighEdu	0.069	-0.030
	(0.73)	(-0.97)
NumKids	-0.009	-0.029
	(-0.11)	(-1.04)
NumImmigrants	0.056	0.005
	(0.95)	(0.21)
Region Fixed-effects	Yes	Yes
N	269	2066
adj. R^2	0.234	0.266

Table 6: Survey Questions for Living Conditions and Financial Difficulties

This table presents the statistics of three survey questions concerning the household's financial difficulties (Question 1 and 2) and living conditions (Question 3).

1: How difficult to deal with your payments?

Answer	N	Percentage
"Very easy"	715	(25.65%)
"Easy"	895	(32.11%)
"Relatively easy"	861	(30.89%)
"Relatively difficult"	216	(7.75%)
"Difficult"	71	(2.55%)
"Very difficult"	27	(0.97%)
All Participants	2,785	(100%)

2: Can you handle an extra 10,000 unexpected expenses?

Answer	N	Percentage
All Participants	2,782	(100%)
"Yes"	2,443	(87.81%)
"No"	339	(12.19%)

3: How is the size of your house?

Answer	N	Percentage
"Too small"	280	(10.05%)
"Correct size"	2,256	(80.95%)
"Too large"	251	(9.01%)

Table 7: Statistics across Subsamples Split by Quartiles of the CashOut-to-Income and Mortgage-to-Income Ratios

This table summarizes the main house and household variables (Panel A) and the six indicators for financial difficulties (Panel B) for subsamples split according to the four quartiles of the *CashOut-to-Income* and *Mortgage-to-Income* ratios respectively.

Variables	CashOut-to-Income				Mortgage-to-Income			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Panel A: Main variables								
CashOut-to-income	-1.31	0.04	0.57	1.76	-0.36	0.09	0.30	0.41
Mortgage-to-Income	1.81	1.60	1.68	3.13	0.46	1.16	1.89	3.97
BoughtPrice	2.85	1.73	1.35	1.31	1.30	1.54	1.95	2.53
PredictedPrice	3.88	3.11	3.24	3.87	3.15	3.30	3.54	4.00
PriceIncrease	0.51	1.44	2.43	3.58	2.92	1.99	1.49	1.34
CurrentMortgage	1.44	1.37	1.44	2.41	0.48	1.18	1.81	2.66
TotalIncome	0.91	0.97	0.97	0.92	1.05	1.03	0.96	0.77
OwnerDuration	5.33	8.78	12.38	13.91	13.76	11.39	9.03	5.97
HouseSize	164.5	159.3	172.0	192.1	171.0	174.4	166.7	171.5
Age	45.60	43.31	46.27	46.96	51.03	47.27	44.41	40.91
Panel B: Indicators for financial difficulties								
Difficulty1	0.101	0.093	0.131	0.180	0.047	0.086	0.134	0.196
Difficulty2	0.094	0.130	0.146	0.163	0.066	0.110	0.146	0.178
Difficulty3	0.147	0.172	0.201	0.245	0.089	0.149	0.200	0.275
Difficulty4	0.139	0.162	0.191	0.227	0.085	0.142	0.194	0.251

Table 8: The CashOut-to-Income Ratio and Household Financial Difficulties

The table reports marginal effects from Probit regressions (Column (1)-(4)) and odds ratios from Logistic regressions (Column (5)-(6)) where the dependent variable is dummies indicating whether the household face financial difficulties. Our interest is to see how cash-out (*CashOut-to-Income*) is associated with financial difficulties. We have four indicators for financial difficulties: *Difficulty1 -Difficulty4*, defined. All variables are defined in Appendix I. All regressions include region fixed effects. An intercept is included but not reported. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, and t-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	Probit	Probit	Logistic	Logistic	Probit	Probit
Y-Variable	Difficulty3	Difficulty4	Difficulty3	Difficulty4	Difficulty3	Difficulty4
CashOut-to-Income	0.043***	0.041***			0.038***	0.040***
	(4.94)	(4.81)			(3.66)	(3.95)
Mortgage-to-Income					0.010	0.003
					(1.03)	(0.30)
CashOut2			1.481**	1.466**		
			(2.28)	(2.18)		
CashOut3			2.077***	2.108***		
			(4.02)	(4.02)		
CashOut4			2.854***	2.822***		
			(5.67)	(5.48)		
OwnerDuration	-0.004***	-0.004***	0.964***	0.966***	-0.003*	-0.004**
	(-2.77)	(-2.58)	(-3.15)	(-2.95)	(-1.95)	(-2.17)
HouseSize	0.000	-0.000	1.000	0.999	0.000	-0.000
	(0.43)	(-1.41)	(0.46)	(-1.40)	(0.30)	(-1.42)
Income2	-0.124***	-0.116***	0.386***	0.391***	-0.118***	-0.113***
	(-6.86)	(-6.64)	(-6.00)	(-5.79)	(-6.30)	(-6.27)
Income3	-0.228***	-0.214***	0.133***	0.135***	-0.220***	-0.210***
	(-11.37)	(-10.98)	(-9.41)	(-9.08)	(-10.48)	(-10.33)
Age	-0.003***	-0.002***	0.981***	0.982***	-0.002***	-0.002***
	(-2.95)	(-2.70)	(-2.90)	(-2.69)	(-2.79)	(-2.62)
Gender	-0.045**	-0.045***	0.716***	0.706***	-0.044**	-0.044***
	(-2.57)	(-2.62)	(-2.75)	(-2.80)	(-2.53)	(-2.59)
Health	-0.089***	-0.079***	0.573***	0.594***	-0.090***	-0.080***
	(-3.57)	(-3.31)	(-3.78)	(-3.45)	(-3.62)	(-3.34)
Urban	-0.061***	-0.035*	0.654***	0.763*	-0.064***	-0.036*
	(-2.71)	(-1.65)	(-2.95)	(-1.81)	(-2.81)	(-1.69)
NumProperty	-0.018	-0.022	0.889	0.846	-0.025	-0.029
	(-1.01)	(-1.28)	(-0.87)	(-1.17)	(-1.37)	(-1.60)
NumMembers	0.041***	0.041***	1.360***	1.388***	0.042***	0.041***
	(3.76)	(3.87)	(3.59)	(3.74)	(3.81)	(3.87)
NumEmployed	-0.017	-0.019	0.861	0.836*	-0.017	-0.019
	(-1.35)	(-1.53)	(-1.49)	(-1.73)	(-1.33)	(-1.53)
NumHighEdu	-0.016	-0.016	0.869	0.859	-0.018	-0.018
	(-1.08)	(-1.16)	(-1.26)	(-1.33)	(-1.26)	(-1.31)
NumKids	-0.015	-0.008	0.888	0.928	-0.016	-0.009
	(-1.21)	(-0.69)	(-1.22)	(-0.75)	(-1.27)	(-0.73)
NumImmigrants	0.032***	0.031***	1.265***	1.267***	0.032***	0.030***
	(3.31)	(3.32)	(3.33)	(3.31)	(3.29)	(3.30)
Region Fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
N	2335	2335	2335	2335	2334	2334
pseudo R^2	0.141	0.140	0.146	0.145	0.142	0.141

Table 9: Household Financial Difficulties: Cross-section Analysis

The table reports marginal effects from Probit regressions where the dependent variable is the dummy, *Difficulty3*, indicating whether the household face financial difficulties. We split the full sampe into two subsamples according to OwnerDuration, Urban, Income, Gender, household size, NumEmployed, NumHighEdu, whether the household have kid(s) and whether the household have immigrant(s), and run the same regression for each subsample All variables are defined in Appendix I. All regressions include region fixed effects. An intercept is included but not reported. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, and t-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OwnerDuration		**Urban**		**Income**		**Gender**		**Health**	
	<=9	>9	=1	=0	Low	High	Male	Female	=0	=1
CashOut-to-Income	0.053***	0.038***	0.033***	0.109***	0.066***	0.023**	0.038***	0.058***	0.041***	0.057**
	(4.30)	(2.95)	(3.71)	(3.76)	(4.14)	(2.43)	(3.83)	(3.27)	(4.49)	(2.08)
N	1307	1028	1916	419	1039	1296	1624	711	1981	354
pseudo R^2	0.128	0.169	0.145	0.158	0.089	0.111	0.128	0.156	0.133	0.163
Difference	insignificant		p=0.05		insignificant		insignificant		insignificant	

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Household Size		**NumEmployed**		**NumHighEdu**		**With Kid(s)**		**With Immigrant(s)**	
	Small	Large	<=1	>=2	=0	>=1	No	Yes	No	Yes
CashOut-to-Income	0.033***	0.053***	0.039**	0.049***	0.061***	0.028***	0.033***	0.053***	0.043***	0.074**
	(2.91)	(3.85)	(2.17)	(4.84)	(4.33)	(2.64)	(2.81)	(4.12)	(4.86)	(2.00)
N	1258	1077	729	1606	1179	1156	1109	1226	2101	234
pseudo R^2	0.152	0.156	0.126	0.144	0.152	0.128	0.166	0.145	0.144	0.200
Difference	insignificant		insignificant		insignificant		insignificant		insignificant	